REPORT No. 316

TABLES FOR PRESSURE OF AIR ON COMING TO REST FROM VARIOUS SPEEDS

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In Technical Report No. 247 of the National Advisory Committee for Aeronautics theoretical formulas are given from which was computed a table for the pressure of air on coming to rest from various speeds, such as those of aircraft and propeller blades. In that report, the table gave incompressible and adiabatic stop pressures of air for even-speed intervals in miles per hour and for some even-speed intervals in knots per hour. Table II of the present report extends the above-mentioned table by including the stop pressures of air for even-speed intervals in miles per hour, feet per second, knots per hour, kilometers per hour, and meters per second. The pressure values in Table II are also more exact than the values given in the previous table.

To furnish the aeronautical engineer with ready numerical formulas for finding the pressure of air on coming to rest, Table I has been derived for the standard values specified below it. This table first presents the theoretical pressure-speed formulas and their working forms in C. G. S. units as given in N. A. C. A. Technical Report No. 247, then furnishes additional working formulas for several special units of speed.

TABLE I.—FORMULAS FOR PRESSURE OF AIR ON COMING TO REST FROM MODERATE SPEEDS

viz, for $V_0<1000$ mi./hr.

		Formulas for barometric plus impact pressure in standard atmospheres	
		Incompressible p_1/p_0	Adiabatic p_2/p_0
General formula		$p_1/p_0=1+\rho_0 V_0^2/2p_0$	$p_2/p_0=[1+(\gamma-1)\ \rho_0 V_0^2/2\gamma p_0]^{\gamma/\gamma-1}$
Specific working formula, V_0=cm/s.		$p_1/p_0=1+.60471\times10^{-6}V_0^2$	$p_2/p_0=(1+1.727735\times10^{-10}V_0^2)^{3.50}$
Additional working formulas	V_0=mi./hr	$p_1/p_0=1+1.20841\times10^{-6}V_0^2$	$p_2/p_0=(1+\ .345259\times10^{-6}V_0^2)^{3.50}$
	V_0=ft./s	$p_1/p_0=1+\ .56180\times10^{-6}V_0^2$	$p_2/p_0=(1+1.60513\times10^{-7}V_0^2)^{3.50}$
	V_0=knots/hr	$p_1/p_0=1+1.60260\times10^{-6}V_0^2$	$p_2/p_0=(1+\ .457884\times10^{-6}V_0^2)^{3.50}$
	V_0=km/h	$p_1/p_0=1+\ .46660\times10^{-6}V_0^2$	$p_2/p_0=(1+1.33313\times10^{-7}V_0^2)^{3.50}$
	V_0=m/s	$p_1/p_0=1+\ .60471\times10^{-6}V_0^2$	$p_2/p_0=(1+1.727735\times10^{-6}V_0^2)^{3.50}$

$p_0=1.0133\times10^6$ dynes/cm^2=1 std. atmo.
$\rho_0=.0012255$ g/cm^3 } U. S. std. values. (See N. A. C. A. Technical Report No. 213.)
$\gamma=1.40$
V_0=Air speed
p_1, p_2=Incompressible and adiabatic stop pressures above vacuo.

TABLE II.—PRESSURE OF AIR ON COMING TO REST FROM VARIOUS SPEEDS

[Symbols defined at bottom of table]

Air speed miles per hour	Barometric plus impact pressure in standard atmospheres: 1 std. atmo.=1.0133×10^6 dynes/cm^2=p_0		Impact pressure in pounds per square foot: 1 std. atmo.=2,116.8 lb./sq. ft.		Impact pressure in inches of water: 1 std. atmo.=407.2 in. of water		Percentage difference
	Incompressible	Adiabatic	Incompressible	Adiabatic	Incompressible	Adiabatic	
0	1.00000000	1.00000000	0.000	0.000	0.000	0.000	0.00
10	1.00012084	1.00012084	.256	.256	.049	.049	.00
20	1.00048336	1.00048343	1.023	1.023	.197	.197	.01
30	1.0010876	1.0010880	2.302	2.303	.443	.443	.04
40	1.0019335	1.0019348	4.093	4.096	.787	.788	.07
50	1.0030210	1.0030243	6.395	6.402	1.230	1.231	.11
60	1.0043503	1.0043569	9.209	9.223	1.771	1.774	.15
70	1.0059212	1.0059338	12.534	12.561	2.411	2.416	.21
80	1.0077338	1.0077553	16.371	16.416	3.149	3.158	.28
90	1.0097881	1.0098223	20.719	20.792	3.986	4.000	.35
100	1.012084	1.012136	25.579	25.689	4.921	4.942	.43
110	1.014622	1.014698	30.952	31.113	5.954	5.985	.52
120	1.017401	1.017509	36.834	37.063	7.086	7.130	.62
130	1.020422	1.020572	43.229	43.547	8.316	8.377	.73
140	1.023685	1.023886	50.136	50.562	9.645	9.726	.85
150	1.027189	1.027454	57.554	58.115	11.071	11.179	.97
160	1.030935	1.031278	65.483	66.209	12.597	12.736	1.11
170	1.034923	1.035361	73.925	74.852	14.221	14.399	1.25
180	1.039152	1.039702	82.877	84.041	15.943	16.167	1.40
190	1.043624	1.044308	92.343	93.791	17.764	18.042	1.57
200	1.048336	1.049175	102.32	104.09	19.682	20.024	1.74
210	1.053291	1.054313	112.81	114.97	21.700	22.116	1.92
220	1.058487	1.059721	123.81	126.42	23.816	24.318	2.11
230	1.063925	1.065397	135.32	138.43	26.030	26.630	2.30
240	1.069604	1.071352	147.34	151.04	28.343	29.055	2.51
250	1.075526	1.077586	159.87	164.23	30.754	31.593	2.73
260	1.081689	1.084101	172.92	178.02	33.264	34.246	2.96
270	1.088093	1.090898	186.48	192.41	35.871	37.014	3.18
280	1.094739	1.097987	200.54	207.42	38.578	39.900	3.43
290	1.10163	1.10537	215.13	223.05	41.384	42.907	3.68
300	1.10876	1.11305	230.22	239.30	44.287	46.034	3.94
310	1.11613	1.12102	245.82	256.18	47.288	49.279	4.21
320	1.12374	1.12931	261.93	273.72	50.387	52.655	4.50
330	1.13160	1.13790	278.57	291.91	53.588	56.153	4.79
340	1.13969	1.14680	295.70	310.75	56.882	59.777	5.09
350	1.14803	1.15602	313.35	330.26	60.278	63.531	5.40
400	1.19335	1.20707	409.28	438.33	78.732	84.319	7.10
500	1.30210	1.33612	639.49	711.50	123.02	136.87	11.26
600	1.43503	1.50688	920.87	1,073.0	177.14	206.40	16.52
700	1.59212	1.72815	1,253.4	1,541.3	241.11	296.50	22.97
800	1.77338	2.01124	1,637.1	2,140.6	314.92	411.78	30.76
900	1.97881	2.37045	2,071.9	2,901.0	398.57	558.05	40.01
1,000	2.20841	2.82371	2,558.0	3,860.4	492.06	742.61	50.92

TABLE II.—PRESSURE OF AIR ON COMING TO REST FROM VARIOUS SPEEDS—Continued

Air speed feet per second	Barometric plus impact pressure in standard atmospheres: 1 std. atmo.=1.0133×10^6 dynes/cm²=p_0		Impact pressure in pounds per square foot: 1 std. atmo.=2,116.8 lb./sq. ft.		Impact pressure in inches of water: 1 std. atmo.=407.2 in. of water		Percentage difference
	Incompressible	Adiabatic	Imcompressible	Adiabatic	Incompressible	Adiabatic	
0	1.000000000	1.000000000	0.000	0.000	0.000	0.000	0.00
10	1.000056180	1.000056180	.119	.119	.023	.023	.00
20	1.00022472	1.00022473	.476	.476	.092	.092	.00
30	1.00050562	1.00050570	1.070	1.070	.206	.206	.02
40	1.00089888	1.00089915	1.903	1.903	.366	.366	.03
50	1.0014045	1.0014052	2.973	2.975	.572	.572	.05
60	1.0020225	1.0020241	4.281	4.285	.824	.824	.08
70	1.0027528	1.0027556	5.827	5.833	1.121	1.122	.10
80	1.0035955	1.0036002	7.611	7.621	1.464	1.467	.13
90	1.0045506	1.0045582	9.633	9.649	1.853	1.856	.17
100	1.0056180	1.0056292	11.892	11.916	2.288	2.292	.20
110	1.0067978	1.0068142	14.390	14.424	2.768	2.775	.24
120	1.0080899	1.0081133	17.125	17.174	3.294	3.304	.29
130	1.0094944	1.0095267	20.098	20.166	3.866	3.879	.34
140	1.011011	1.011055	23.308	23.401	4.484	4.502	.40
150	1.012641	1.012697	26.758	26.877	5.147	5.170	.44
160	1.014382	1.014456	30.444	30.600	5.856	5.886	.51
170	1.016236	1.016330	34.368	34.567	6.611	6.650	.58
180	1.018202	1.018322	38.530	38.784	7.412	7.461	.66
190	1.020281	1.020428	42.931	43.242	8.258	8.318	.72
200	1.022472	1.022653	47.569	47.952	9.151	9.224	.81
210	1.024775	1.024995	52.444	52.909	10.088	10.178	.89
220	1.027191	1.027456	57.558	58.119	11.072	11.180	.97
230	1.029719	1.030036	62.909	63.580	12.102	12.231	1.07
240	1.032360	1.032735	68.500	69.293	13.177	13.330	1.16
250	1.035113	1.035555	74.327	75.263	14.298	14.478	1.26
260	1.037978	1.038496	80.392	81.488	15.465	15.676	1.36
270	1.040955	1.041556	86.694	87.966	16.677	16.922	1.47
280	1.044045	1.044741	93.234	94.708	17.935	18.219	1.58
290	1.047247	1.048049	100.01	101.71	19.239	19.566	1.70
300	1.050562	1.051481	107.03	108.97	20.589	20.963	1.82
310	1.053989	1.055037	114.28	116.50	21.984	22.411	1.94
320	1.057528	1.058721	121.78	124.30	23.425	23.911	2.07
330	1.061180	1.062528	129.51	132.36	24.912	25.461	2.20
340	1.064944	1.066463	137.47	140.69	26.445	27.064	2.34
350	1.068821	1.070529	145.68	149.30	28.024	28.719	2.48
360	1.072809	1.074720	154.12	158.17	29.648	30.426	2.62
370	1.076910	1.079045	162.80	167.32	31.318	32.187	2.78
380	1.081124	1.083501	171.72	176.75	33.034	34.002	2.93
390	1.085450	1.088089	180.88	186.47	34.795	35.870	3.09
400	1.089888	1.092810	190.27	196.46	36.602	37.792	3.25
410	1.094439	1.097665	199.91	206.74	38.456	39.769	3.42
420	1.099102	1.10266	209.78	217.31	40.354	41.803	3.59
430	1.10388	1.10779	219.89	228.17	42.300	43.892	3.76
440	1.10876	1.11305	230.22	239.30	44.287	46.034	3.94
450	1.11376	1.11846	240.81	250.76	46.323	48.237	4.13
460	1.11888	1.12401	251.65	262.50	48.408	50.497	4.32
470	1.12410	1.12970	262.69	274.55	50.534	52.814	4.51
480	1.12944	1.13553	274.00	286.89	52.703	55.188	4.70
490	1.13489	1.14151	285.54	299.55	54.927	57.623	4.91
500	1.14045	1.14763	297.30	312.50	57.191	60.115	5.11
550	1.16994	1.18051	359.73	382.10	69.200	73.504	6.22
600	1.20225	1.21728	428.12	459.94	82.356	88.476	7.43
700	1.27528	1.30342	582.71	642.28	112.09	123.55	10.22
800	1.35955	1.40813	761.10	863.93	146.41	166.19	13.51
900	1.45506	1.53392	963.27	1,130.2	185.30	217.41	17.33
1,000	1.56180	1.68372	1,189.2	1,447.3	228.76	278.41	21.70
1,100	1.67978	1.86121	1,439.0	1,823.0	276.81	350.68	26.69
1,200	1.80899	2.07050	1,712.5	2,266.0	329.42	435.91	32.33
1,300	1,94944	2.31650	2,009.8	2,786.8	386.61	536.08	38.66
1,400	2.10113	2.60489	2,330.9	3,397.2	448.38	653.51	45.75
1,500	2.26405	2.94219	2,675.7	4,111.2	514.72	790.86	53.65

TABLE II.—PRESSURE OF AIR ON COMING TO REST FROM VARIOUS SPEEDS—Continued

Air speed knots per hour	Barometric plus impact pressure in standard atmospheres: 1 std. atmo.=1.0133×10^6 dynes/cm^2=p_0		Impact pressure in pounds per square foot: 1 std. atmo.=2,116.8 lb./sq. ft.		Impact pressure in inches of water: 1 std. atmo.=407.2 in. of water		Percentage difference
	Incompressible	Adiabatic	Imcompressible	Adiabatic	Incompressible	Adiabatic	
0	1.00000000	1.00000000	0.000	0.000	0.000	0.000	0.00
10	1.00016026	1.00016026	.339	.339	.065	.065	.00
20	1.00064104	1.00064117	1.357	1.357	.261	.261	.02
30	1.0014423	1.0014431	3.053	3.055	.587	.588	.06
40	1.0025642	1.0025665	5.428	5.433	1.044	1.045	.09
50	1.0040065	1.0040122	8.481	8.493	1.631	1.634	.14
60	1.0057694	1.0057814	12.213	12.238	2.349	2.354	.21
70	1.0078527	1.0078746	16.623	16.669	3.198	3.207	.28
80	1.010257	1.010294	21.712	21.790	4.177	4.192	.36
90	1.012981	1.013041	27.478	27.605	5.286	5.310	.46
100	1.016026	1.016118	33.924	34.119	6.526	6.563	.57
110	1.019391	1.019526	41.047	41.333	7.896	7.951	.70
120	1.023077	1.023268	48.849	49.254	9.397	9.475	.83
130	1.027084	1.027347	57.331	57.888	11.029	11.136	.97
140	1.031411	1.031765	66.491	67.240	12.791	12.935	1.13
150	1.036059	1.036524	76.330	77.314	14.683	14.873	1.29
160	1.041027	1.041632	86.846	88.127	16.706	16.953	1.47
170	1.046315	1.047087	98.040	99.674	18.859	19.174	1.67
180	1.051924	1.052893	109.91	111.96	21.143	21.538	1.87
190	1.057854	1.059060	122.47	125.02	23.558	24.049	2.08
200	1.064104	1.065584	135.70	138.83	26.103	26.706	2.31
210	1.070675	1.072478	149.60	153.42	28.779	29.513	2.55
220	1.077566	1.079740	164.19	168.79	31.585	32.470	2.80
230	1.084778	1.087375	179.46	184.96	34.522	35.579	3.06
240	1.092310	1.095393	195.40	201.93	37.589	38.844	3.34
250	1.10016	1.10380	212.02	219.72	40.785	42.267	3.63
260	1.10834	1.11259	229.33	238.33	44.116	45.847	3.92
270	1.11683	1.12179	247.31	257.81	47.573	49.593	4.25
280	1.12567	1.13138	266.02	278.11	51.173	53.498	4.57
290	1.13478	1.14139	285.30	299.29	54.882	57.574	4.90
300	1.14423	1.15182	305.31	321.37	58.730	61.821	5.26
350	1.19632	1.21047	415.57	445.52	79.942	85.703	7.21
400	1.25642	1.28076	542.79	594.31	104.41	114.33	9.49
500	1.40065	1.46130	848.10	976.48	163.14	187.84	15.14
600	1.57694	1.70582	1221.3	1494.1	234.93	287.41	22.34
700	1.78527	2.03087	1662.3	2182.1	319.76	419.77	31.28
800	2.02566	2.45841	2171.1	3087.2	417.65	593.86	42.19
900	2.29811	3.01654	2747.8	4268.6	528.59	821.14	55.34

TABLE II.—PRESSURE OF AIR ON COMING TO REST FROM VARIOUS SPEEDS—Continued

Air speed kilometers per hour	Barometric plus impact pressure in standard atmospheres: 1 std. atmo. $=1.0133\times10^6$ dynes/cm$^2=p_0$		Impact pressure in kilograms per square meter: 1 std. atmo. $=10332$ kg/m^2		Impact pressure in millimeters of water: 1 std. atmo. $=10343$ mm of water		Percentage difference
	Incompressible	Adiabatic	Incompressible	Adiabatic	Incompressible	Adiabatic	
0	1. 000000000	1. 000000000	0. 000	0. 000	0. 000	0. 000	0. 00
10	1. 000046660	1. 000046660	. 482	. 482	. 483	. 483	. 00
20	1. 00018664	1. 00018664	1. 928	1. 928	1. 930	1. 930	. 00
30	1. 00041994	1. 00041999	4. 339	4. 339	4. 343	4. 344	. 01
40	1. 00074656	1. 00074675	7. 713	7. 715	7. 722	7. 724	. 03
50	1. 0011665	1. 0011670	12. 052	12. 057	12. 065	12. 070	. 04
60	1. 0016798	1. 0016808	17. 356	17. 366	17. 374	17. 385	. 06
70	1. 0022863	1. 0022882	23. 622	23. 642	23. 647	23. 667	. 08
80	1. 0029862	1. 0029894	30. 853	30. 886	30. 886	30. 919	. 11
90	1. 0037795	1. 0037843	39. 050	39. 099	39. 091	39. 141	. 13
100	1. 0046660	1. 0046737	48. 209	48. 289	48. 260	48. 340	. 17
110	1. 0056459	1. 0056573	58. 333	58. 451	58. 396	58. 513	. 20
120	1. 0067190	1. 0067351	69. 421	69. 587	69. 495	69. 661	. 24
130	1. 0078855	1. 0079077	81. 473	81. 702	81. 560	81. 789	. 28
140	1. 0091454	1. 0091751	94. 490	94. 797	94. 591	98. 049	. 33
150	1. 010499	1. 010538	108. 48	108. 88	108. 59	108. 99	. 37
160	1. 011945	1. 011996	123. 42	123. 94	123. 55	124. 07	. 43
170	1. 013485	1. 013550	139. 33	140. 00	139. 48	140. 15	. 48
180	1. 015118	1. 015199	156. 20	157. 04	156. 37	157. 20	. 54
190	1. 016844	1. 016946	174. 03	175. 09	174. 22	175. 27	. 61
200	1. 018664	1. 018788	192. 84	194. 12	193. 04	194. 32	. 66
210	1. 020577	1. 020728	212. 60	214. 16	212. 83	221. 51	. 73
220	1. 022583	1. 022766	233. 33	235. 22	233. 58	235. 47	. 81
230	1. 024683	1. 024901	255. 02	257. 28	255. 30	257. 55	. 88
240	1. 026876	1. 027135	277. 68	280. 36	277. 98	280. 66	. 96
250	1. 029163	1. 029467	301. 31	304. 45	301. 63	304. 78	1. 04
260	1. 031542	1. 031899	325. 89	329. 58	326. 24	329. 93	1. 13
270	1. 034015	1. 034430	351. 44	355. 73	351. 82	356. 11	1. 22
280	1. 036581	1. 037062	377. 95	382. 92	378. 36	383. 33	1. 32
290	1. 039241	1. 039795	405. 44	411. 16	405. 87	411. 60	1. 41
300	1. 041994	1. 042627	433. 88	440. 42	434. 34	440. 89	1. 51
310	1. 044840	1. 045561	463. 29	470. 74	463. 78	471. 24	1. 61
320	1. 047780	1. 048599	493. 66	502. 12	494. 19	502. 66	1. 71
330	1. 050813	1. 051742	525. 00	534. 60	525. 56	535. 17	1. 83
340	1. 053939	1. 054986	557. 30	568. 12	557. 89	568. 72	1. 94
350	1. 057159	1. 058335	590. 57	602. 72	591. 20	603. 36	2. 06
360	1. 060471	1. 061787	624. 79	638. 38	625. 45	639. 06	2. 18
370	1. 063878	1. 065349	659. 99	675. 19	660. 69	675. 90	2. 30
380	1. 067377	1. 069012	696. 14	713. 03	696. 88	713. 79	2. 43
390	1. 070970	1. 072787	733. 26	752. 04	734. 04	752. 84	2. 56
400	1. 074656	1. 076667	771. 35	792. 12	772. 17	792. 97	2. 69
410	1. 078435	1. 080657	810. 39	833. 35	811. 25	834. 24	2. 83
420	1. 082308	1. 084754	850. 41	875. 68	851. 31	876. 61	2. 97
430	1. 086274	1. 088966	891. 38	919. 20	892. 33	920. 11	3. 12
440	1. 090334	1. 093284	933. 33	963. 81	934. 32	964. 84	3. 27
450	1. 094487	1. 097718	976. 24	1, 009. 6	977. 28	1, 010. 7	3. 42
460	1. 098733	1. 10226	1, 020. 1	1, 056. 6	1, 021. 2	1, 057. 7	3. 57
470	1. 10307	1. 10692	1, 064. 9	1, 104. 7	1, 066. 1	1, 105. 9	3. 74
480	1. 10750	1. 11169	1, 110. 7	1, 154. 0	1, 111. 9	1, 155. 2	3. 90
490	1. 11203	1. 11658	1, 157. 5	1, 204. 5	1, 158. 7	1, 205. 8	4. 06
500	1. 11665	1. 12159	1, 205. 2	1, 256. 3	1, 206. 5	1, 257. 6	4. 24
510	1. 12136	1. 12671	1, 253. 9	1, 309. 2	1, 255. 2	1, 310. 6	4. 41
520	1. 12617	1. 13196	1, 303. 6	1, 363. 4	1, 305. 0	1, 364. 9	4. 59
530	1. 13107	1. 13732	1, 354. 2	1, 418. 8	1, 355. 7	1, 467. 5	4. 77
540	1. 13606	1. 14280	1, 405. 8	1, 475. 4	1, 407. 3	1, 477. 0	4. 95
550	1. 14115	1. 14840	1, 458. 4	1, 533. 3	1, 459. 9	1, 534. 9	5. 14
600	1. 16798	1. 17830	1, 735. 6	1, 842. 2	1, 737. 4	1, 844. 2	6. 14
700	1. 22863	1. 24791	2, 362. 2	2, 561. 4	2, 364. 7	2, 564. 1	8. 43
800	1. 29862	1. 33184	3, 085. 3	3, 428. 6	3, 088. 6	3, 432. 2	11. 12
900	1. 37795	1. 43173	3, 905. 0	4, 460. 6	3, 909. 1	4, 465. 4	14. 23
1, 000	1. 46660	1. 54960	4, 820. 9	5, 678. 5	4, 826. 0	5, 684. 5	17. 79
1, 100	1. 56459	1. 68779	5, 833. 3	7, 106. 2	5, 839. 6	7, 113. 8	21. 82
1, 200	1. 67190	1. 84896	6, 942. 1	8, 771. 5	6, 949. 5	8, 780. 8	26. 35
1, 300	1. 78855	2. 03633	8, 147. 3	10, 707	8, 156. 0	10, 719	31. 42
1, 400	1. 91454	2. 25347	9, 449. 0	12, 951	9, 459. 1	12, 965	37. 06
1, 500	2. 04985	2. 50463	10, 847	15, 546	10, 859	15, 562	43. 32

TABLE II.—PRESSURE OF AIR ON COMING TO REST FROM VARIOUS SPEEDS—Continued

Air speed meters per second	Barometric plus impact pressure in standard atmospheres: 1 std. atmo. $=1.0133\times10^6$ dynes/cm$^2=p_0$		Impact pressure in kilograms per square meter: 1 std. atmo. $=10332$ kg/m^2		Impact pressure in millimeters of water: 1 std. atmo. $=10343$ mm of water		Percentage difference
	Incompressible	Adiabatic	Incompressible	Adiabatic	Incompressible	Adiabatic	
0	1. 00000000	1. 00000000	0. 000	0. 000	0. 000	0. 000	0. 00
5	1. 00015118	1. 00015118	1. 562	1. 562	1. 571	1. 571	. 00
10	1. 00060471	1. 00060482	6. 248	6. 249	6. 255	6. 256	. 02
15	1. 0013606	1. 0013612	14. 058	14. 064	14. 073	14. 079	. 04
20	1. 0024188	1. 0024209	24. 991	25. 013	25. 018	25. 039	. 09
25	1. 0037794	1. 0037844	39. 049	39. 100	39. 090	39. 142	. 13
30	1. 0054424	1. 0054531	56. 231	56. 341	56. 291	56. 401	. 20
35	1. 0074077	1. 0074274	76. 536	76. 740	76. 618	76. 822	. 27
40	1. 0096754	1. 0097089	99. 966	100. 31	100. 07	100. 42	. 35
45	1. 012245	1. 012299	126. 52	127. 07	126. 65	127. 21	. 44
50	1. 015118	1. 015199	156. 20	157. 04	156. 37	157. 20	. 54
55	1. 018292	1. 018412	188. 99	190. 23	189. 19	190. 44	. 66
60	1. 021770	1. 021939	224. 93	226. 67	225. 17	226. 92	. 78
65	1. 025549	1. 025783	263. 97	266. 39	264. 25	266. 67	. 92
70	1. 029631	1. 029946	306. 15	309. 40	306. 47	309. 73	1. 06
75	1. 034015	1. 034430	351. 44	355. 73	351. 82	356. 11	1. 22
80	1. 038701	1. 039241	399. 86	405. 44	400. 28	405. 87	1. 40
85	1. 043690	1. 044376	451. 41	458. 49	451. 89	458. 98	1. 57
90	1. 048982	1. 049845	506. 08	515. 00	506. 62	515. 55	1. 76
95	1. 054575	1. 055648	563. 87	574. 96	564. 47	575. 57	1. 97
100	1. 060471	1. 061787	624. 79	638. 38	625. 45	639. 06	2. 18
105	1. 066669	1. 068271	688. 82	705. 38	689. 56	706. 13	2. 40
110	1. 073170	1. 075103	755. 99	775. 96	756. 80	776. 79	2. 64
115	1. 079973	1. 082282	826. 28	850. 14	827. 16	851. 04	2. 89
120	1. 087078	1. 089818	899. 69	928. 00	900. 65	928. 99	3. 15
125	1. 094486	1. 097717	976. 23	1009. 6	977. 27	1010. 7	3. 42
130	1. 10220	1. 10598	1055. 9	1095. 0	1057. 1	1096, 2	3. 70
135	1. 11021	1. 11461	1138. 7	1184. 2	1139. 9	1185. 4	3. 99
140	1. 11852	1. 12363	1224. 5	1277. 3	1225. 9	1278. 7	4. 31
145	1. 12714	1. 13302	1313. 6	1374. 4	1315. 0	1375. 8	4. 62
150	1. 13606	1. 14280	1405. 8	1475. 4	1407. 3	1477. 0	4. 95
155	1. 14528	1. 15298	1501. 0	1580. 6	1502. 6	1582. 3	5. 30
160	1. 15481	1. 16355	1599. 5	1689. 8	1601. 2	1691. 6	5. 65
200	1. 24188	1. 26351	2499. 1	2722. 6	2501. 8	2725. 5	8. 94
250	1. 37794	1. 43173	3904. 9	4460. 6	3909. 0	4465. 4	14. 23
300	1. 54424	1. 65842	5623. 1	6802. 8	5629. 1	6810. 0	20. 98
350	1. 74077	1. 95803	7653. 6	9898. 4	7661. 8	9908. 9	29. 33
400	1. 96754	2. 34964	9996. 6	13944.	10007.	13959.	39. 49
450	2. 22454	2. 85774	12652.	19194.	12665.	19215.	51. 71

$p_0=1.0133\times10^6$ dynes/cm^2=1 std. atmo.
$\rho_0=.0012255$ g/cm^3
} U. S. std. values. (See N. A. C. A. Technical Report No. 218.)

$\gamma=1.40$.

V_0= Air speed in cm/s.

p_1/p_0 (incompress.) $=1+\rho_0 V_0^2/2p_0=1+.60471\times10^{-6}\ V_0^2$ atmo.

p_2/p_0 (adiabatic) $=[1+(\gamma-1)\rho_0\ V_0^2/2\gamma p_0]^{\gamma/\gamma-1}=(1+1.727735\times10^{-12}\ V_0^2)^{3.5}$

Using $\gamma=1.404$ would lower the values in columns 5 and 7 less than 0.02 per cent for speeds less than 350 miles per hour.

AERODYNAMICAL LABORATORY,
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